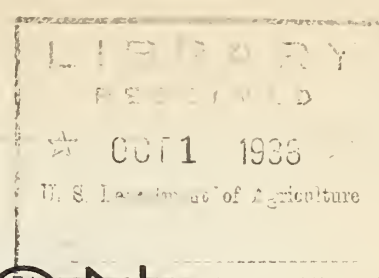


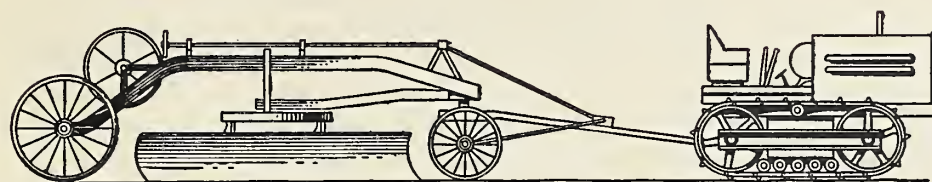
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CONSTRUCTION



HINTS

UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE
WASHINGTON, D. C.

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September 10, 1938

No. 17

BOX-TYPE TAIL LIGHT BRACKET

Designed by H. G. Houlding - Manistee P.U. R-9

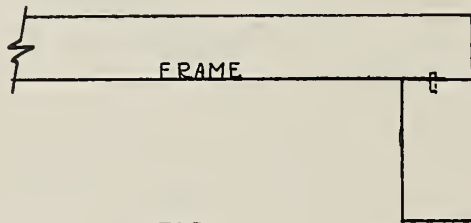
The box type tail light bracket installed on 1935 Chevrolet stake trucks has proven the most successful one yet to be used. The advantage is its rigidity and ability to withstand considerable strain. The protector is a simple open front box made from heavy sheet steel being 2" deep, and $6\frac{1}{2}$ " x $4\frac{1}{2}$ " rectangular with a $1\frac{1}{2}$ " square hole cut in the back to allow for the wiring to enter. The box is bolted to the frame through the holes that are already present. The corners of the box are brazed and it is now nearly as rigid as the frame itself.

Look both ways - but drive only one way — carefully !

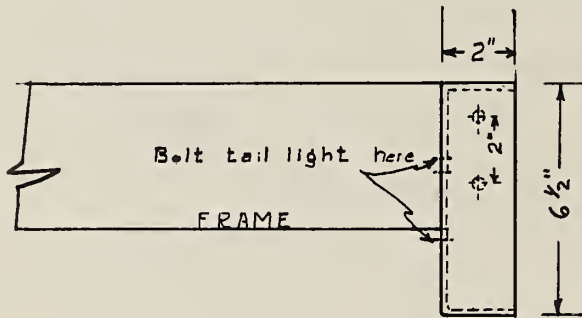
(over)

BOX-TYPE BRACKET FOR TAIL LIGHT

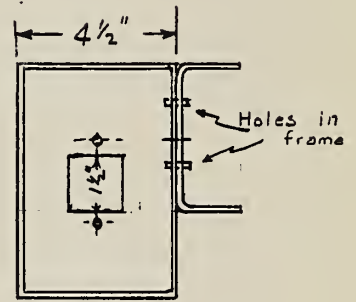
By H.G. Houlding - Mechanic



TOP

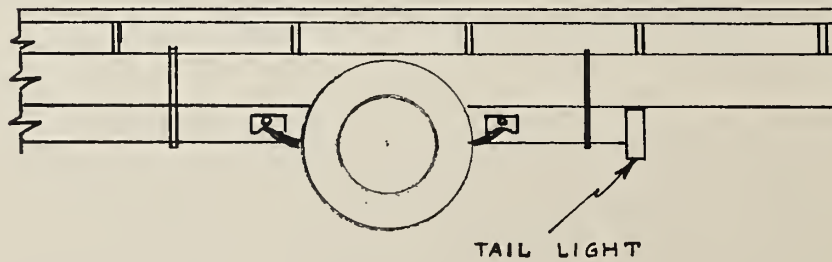


SIDE



REAR

Scale .2" = 1"



A MAKESHIFT RIVER FERRY

by

S. M. Munson, Associate Conservationist
California Forest and Range Experiment Station

A 400-foot wooden bridge on the Kings River near Trimmer, California, which was the only crossing for transporting WPA workers from their base camp on the south side of the river to the Experiment Station's work project on the north side, was washed away by winter floods. Since transportation had to be reestablished immediately, and time and funds were not available to replace the bridge, a cable and boat ferry similar to those used by early settlers was installed. The river current is being utilized as a source of motive power by holding the long axis of the boat at an angle to it, generating in this way sufficient forces to propel the boat from bank to bank.

At the point selected for the crossing, the river had the following characteristics:

- (a) A channel with capacity to accommodate wide fluctuations in river discharge which have ranged from 5,000 to 35,000 second-feet.
- (b) Uniform velocities over the cross section at any given stage. Average velocities vary from about 5 feet per second at low flows to 15 feet per second at high flows.
- (c) Sufficient depth over the entire cross section to prevent snagging or grounding of the boat at low water.
- (d) Gently sloping, sandy river banks to protect the boat while landing.
- (e) An accessible location making it possible to transport the men by truck to within walking distance of the ferry site, on each side of the river.

A one-inch cable was strung across the river, at right angles to the current, ten feet above average high water surface, utilizing "A" frames to obtain this height, dead-men for anchors, and a turn-buckle for tightening the cable.

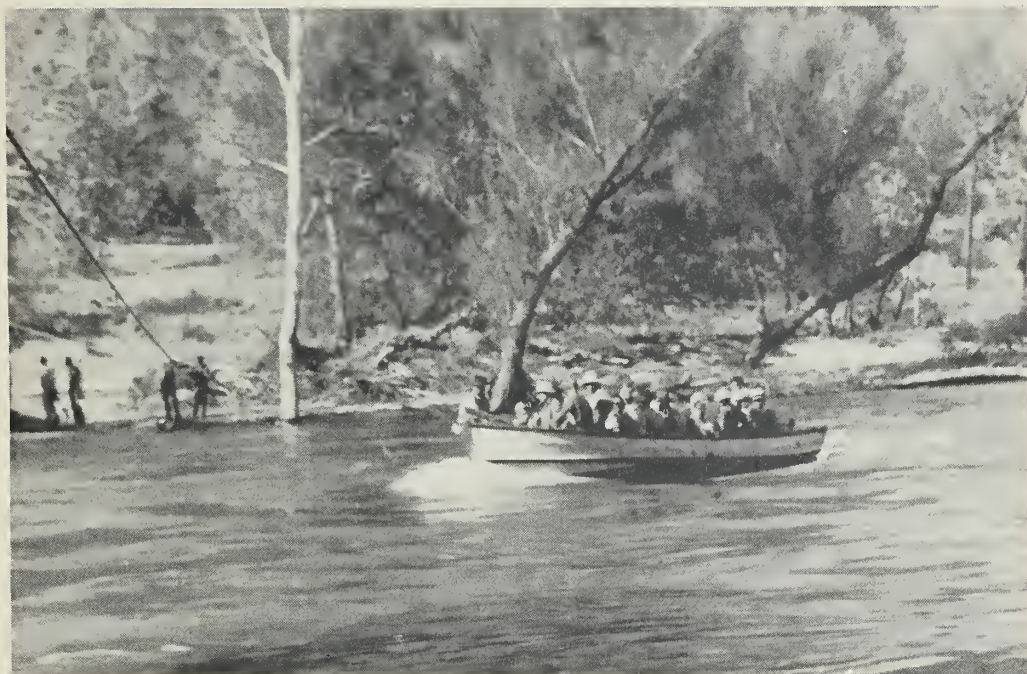
A trolley was fabricated from discarded pulleys and scrap iron in our field shop, utilizing two 10-inch sheaves, each mounted between two pieces of iron plate and held at 36-inch centers by two side braces. A third brace closed the bottom of the assembly to form a hanger for the boat cable and to prevent the trolley jumping the stationary line.

The prow of the boat is attached to the trolley with a one-half inch cable. By means of this fastening and use of the rudder, the boat

can be held at an angle to the current which produces a resultant force sufficient to propel it across the river.

The direction of travel is determined by the position of the boat in relation to the current. Assuming the long axis of the boat to be parallel to the current with the prow facing upstream, travel to the right would be effected by rotating the stern towards the left in a clockwise direction. Conversely, travel to the left would be achieved by rotating the stern in a counter-clockwise direction.

The accompanying photograph illustrates the ferry in operation with 25 men being carried across the 300-foot river section in one minute, and the river discharge being 18,000 second-feet.



Cable-and-boat ferry across Kings River near Trimmer, California. Used to transport WPA workers from their base camp on south side of river to work project on north side. 300-foot crossing requires one minute with 25 men at river discharge of 18,000 second-feet.

RIVER FERRY TROLLEY DETAILS

KINGS RIVER BRANCH
CALIFORNIA FOREST & RANGE EXPERIMENT STATION

